

REMARKS

The Examiner has rejected claims 1 through 5, 12 through 18, 24 and 25 under 35 U.S.C. §102(e). The Examiner has also rejected claims 6 through 11 and 19 through 23 under 35 U.S.C. §103(a). In view of the above amendments and the following remarks, Applicants respectfully request the Examiner to reconsider the withdrawal of the above rejections.

The Section 102 Rejections

The Examiner has rejected claims 1 through 5, 12 through 18, 24 and 25 under 35 U.S.C. §102(e) as allegedly anticipated by the Irie reference. The Examiner has pointed out that every element of independent claims 1 and 14 has been allegedly disclosed by the disclosure of the Irie reference.

Newly amended independent claim 1 now explicitly recites “monitoring an average value of a total optical strength level” and “adjusting said amplification based upon the average value of the total strength level and the probe optical strength level so as to substantially reduce a gain tilt. . . .” Similarly newly amended independent claim 14 now explicitly recites “a first monitor . . . for monitoring an average value of a total optical strength level” and “an adjustment unit . . . for adjusting the amplification characteristic based upon the average value of the total strength level and the probe optical strength level so as to substantially reduce a gain tilt”

The Irie reference discloses a “Method, Device, and System For Level Equalization” for optical amplifiers. As illustrated in Figure 11, the Irie reference discloses in lines 16 through 25 in column 8 as follows:

The first feedback loop includes a beam splitter 70 and a tilt sensor 72 each for detecting the level tilt of light amplified by the optical amplifiers 30 and 32, and a control circuit 74 for adjusting the power of pump light to be output from the laser diode 36 so that the level tilt detected above becomes substantially flat.

The second feedback loop includes a beam splitter 76 and a photodetector 78 each for detecting the output level from the optical amplifier 32, and a control circuit 80 for adjusting the power of pump light to be output from the laser diode 42.

The above disclosure on the first feedback loop for substantially flattening the optical tilt is further provided with respect to Figures 5 and 6A through 6C.

The Irie reference discloses that the optical tilt is corrected by the following mechanism. In the tilt monitor 50, the optical filter 54 is used to for “weighting, and its transmittance increases or decreases according to wavelength in a given band.” (lines 10 through 12, column 6). Assuming the linear increase in transmittance in the optical filter 54, Figures 6A illustrates that a photocurrent flowing in the photodetector 56 has a normal value in case of a flat gain tilt. On one hand, Figures 6B illustrates that a photocurrent flowing in the photodetector 56 has a higher value than the normal value in case of a positive gain tilt. On the other hand, Figures 6C illustrates that a photocurrent flowing in the photodetector 56 has a lower value than the normal value in case of a negative gain tilt. (lines 12 through 22, column 6). As disclosed above, the Irie reference teaches the correction of the optical tilt based upon the relative photocurrent level indicative of light after filtering by the linearly increasing transmittance optical filter 54. The relative light level is the normal value in case of a flat gain tilt.

In sharp contrast to the above described Irie reference, newly amended independent claims 1 and 14 now explicitly recite “adjusting said [/the] amplification [/characteristics] based upon the average value of the total strength level and the probe optical strength level so as to substantially reduce a gain tilt. . . .” In other words, the average value of the total optical strength for a band of wavelengths and the arbitrary selected wavelength probe strength level are used to correct the optical tilt in the current invention. The Irie reference uses the relative light level that is the normal value in case of a flat gain tilt. Thus, the Irie reference fails to anticipate the use of the average value of the total optical strength and the arbitrary selected wavelength probe strength level for

the optical tilt correction. For the above described patentable distinction, Applicants respectfully submit to the Examiner that the anticipation of newly amended independent claims 1 and 14 is now improper based upon the Irie reference.

Dependent claims 2 through 5, 12, 13, 15 through 18, 24 and 25 ultimately depend from either of newly amended independent claims 1 and 14 and incorporate the above described patentable features of the current invention as explicitly recited in newly amended independent claim 1 or 14. For the above reasons, Applicants now respectfully submit to the Examiner that the rejections of claims 1 through 5, 12 through 18, 24 and 25 under 35 U.S.C. §102(e) in view of the Irie reference should be withdrawn.

The Section 103 Rejections

The Examiner has also rejected claims 6 through 11 and 19 through 23 under 35 U.S.C. §103(a) as allegedly being obvious over the Irie reference in view of the Kobayashi et al. reference. The Examiner has cited the Kobayashi et al. reference for disclosing, teaching or suggesting the control of the gain tilt and gain power of an optical amplifier by monitoring both the input and output of the optical amplifier.

In the discussion for the above section 102 rejections, newly amended independent claims 1 and 14 have been distinguished over the Irie reference on the basis of the use of the “average value of the total optical strength” in correcting the optical tilt. Similarly, the Kobayashi et al. reference also discloses the correction of the optical tilt based upon the relative photocurrent level indicative of light after filtering by the variable transmittance fiber grating 52. The fiber grating is controlled by varying the temperature to maintain the optical tilt. The Kobayashi et al. reference also fails to disclose, teach or suggest the use of the average value of the total optical strength and the arbitrary selected wavelength probe strength level for the optical tilt correction.

For the above reasons, even if the Kobayashi et al. reference is combined with the Irie reference, the combined disclosures still fail to teach, disclose or suggest the use of the average value of the total optical strength and the arbitrary selected wavelength probe strength level for the optical tilt correction.

Dependent claims 6 through 11 and 19 through 23 ultimately depend from either of newly amended independent claims 1 and 14 and incorporate the above described patentable features of the current invention as explicitly recited in newly amended independent claim 1 or 14. For the above reasons, Applicants now respectfully submit to the Examiner that the rejections of claims 6 through 11 and 19 through 23 under 35 U.S.C. §103 in view of the Irie reference and the Kobayashi et al. reference should be withdrawn.

Newly Added Claims

Newly added claims 26 through 37 have been added to the current application without introducing new matter. The subject matter limitations of the newly added dependent claims have been disclosed by the original disclosures of the current application. Thus, Applicants respectfully submit that the newly added dependent claims should be entered and allowed.

Drawing Amendment

Fig. 16B has been amended to be consistent with the original disclosures at lines 8 through 11 on page 23. No new matter has been introduced by this correction.

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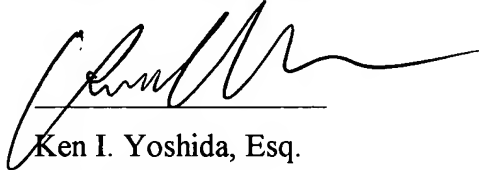
Amdt. dated May 11, 2005

Response to Office Action of January 12, 2005

Conclusion

In view of the above amendments and the foregoing remarks, Applicant respectfully submits that all of the pending claims are in condition for allowance and respectfully request a favorable Office Action so indicating.

Respectfully submitted,



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Amendments to the Drawings:

The attached drawing sheet includes changes to Fig. 16B. This sheet replaces the originally filed sheet of Fig. 16B. In Fig. 16B, the triangular portion above the bands P1_TOTAL'715-14 through P1_TOTAL'715-44 has been deleted as shown in red in the annotated version.

Attachment: Replacement Sheets
Annotated Version



Fig.16A

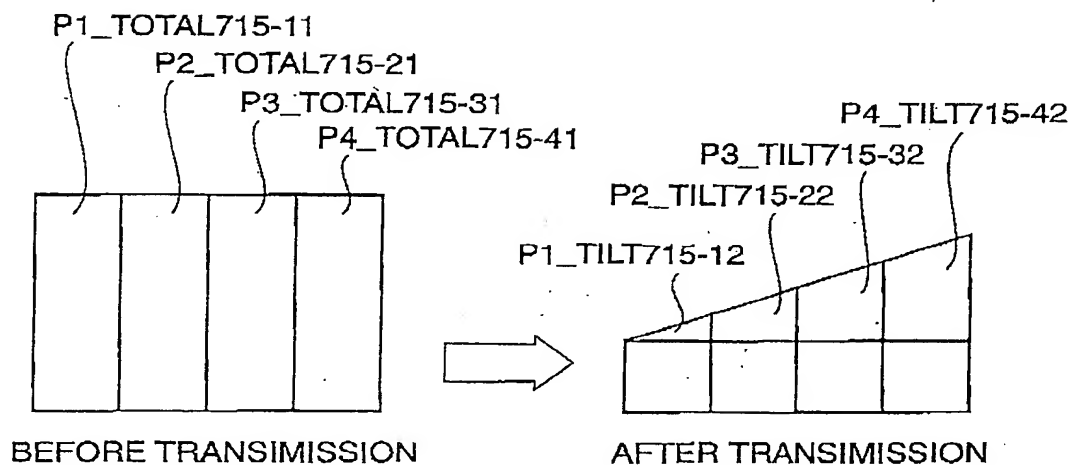


Fig.16B

